

Work Order ID 72808

Monday, August 15, 2011 2:33:29 PM



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Item ID:	D6104-011	Accept		Setup	Start	
Revision ID:					Stop	
Item Name:	17-4 SS Roundbar 6.50"OD					
Start Date:	8/15/2011	Start Qty:	10.00		Cust Item ID:	
Required Date:	8/26/2011	Req'd Qty:	10.00		Customer:	
Reference:						

Approvals:	Process Plan:	<u>CL</u>	Date:	<u>11/08/15</u>	Tooling:		Date:		Run	Start	
	QC:		Date:		SPC (Y/N):		Date:			Stop	

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr								
D6104	Rev B								

100		PURCHASING	0.00						
Purchasing		Memo	0.00						
Purchasing		Issue P/O: <u>14689</u> <input type="checkbox"/> a) Description: S.S round billet <input type="checkbox"/> b) Ø6.50" x 4.100" long <input type="checkbox"/> c) Tolerance on all dimensions are +0.030"/-0.000" <input type="checkbox"/> d) Material: 17-4PH Stainless steel <input type="checkbox"/> e) Min UTS = 170 KSI (38 HRC) <input type="checkbox"/> Material certification required							<u>CL 11/08/16 10</u>
110		Receive & Inspect for Damage & Mat'l Certs	0.00						
Packaging		Memo	0.00						
Packaging		Ensure material certification is attached							<u>P 4/2/29 (10)</u>
120		QC6- Inspect dimensions to drawing	0.00						
QC		Memo	0.00						
Quality Control		Ensure Material certification comply to Dwg D6104							<u>10 0</u>

11/08/29

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 72808

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Monday, August 15, 2011 2:33:29 PM

Item ID: D6104-011

Accept



Setup Start



Revision ID:

Stop



Item Name: 17-4 SS Roundbar 6.50"OD

Start Date: 8/15/2011 Start Qty: 10.00



Cust Item ID:

Required Date: 8/26/2011 Req'd Qty: 10.00



Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start



QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

130

Identify as per dwg & Stock Location: *MAT 43* 0.00

Packaging

Memo

0.00

*and 11/08/29**10 10*

Packaging

140

QC21- Final Inspection - Work Order Release 0.00



QC

Memo

0.00

Quality Control

11/8/29
11/08/29

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Work Order ID: 72808

Parent Item: D6104-011

Parent Item Name: 17-4 SS Roundbar 6.50"OD





Start Date: 8/15/2011

Required Date: 8/26/2011

Start Qty: 10.00

Required Qty: 10.00

Comments: IPP A 02.12.02 New Issue KJ/RF

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6104-011P  17-4 SS Roundbar 6.50"OD		Purchased	No			110	Each	0.0000	1 	10			

Picklist 9/10

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

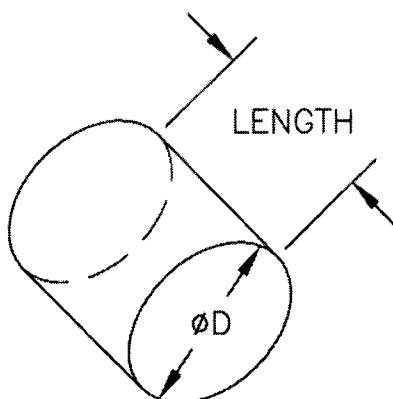


DESIGN <i>[Signature]</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED

02.11.29 *[Signature]*

SPECIFICATION CONTROL DRAWING



CL 11102/15
W/O: 72808

MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRc)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

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**Castle Metals®**

A. M. Castle & Co.

PACKING SLIP

Page 1 of 1

Shipment No:950481

Ship From: A. M. Castle & Co. (Canada) Inc. MONTREAL 835-SELKIRK AVENUE POINTE CLAIRE, QUEBEC H9R 3S2		Sold To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA		Ship To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CAN		Deliver To: DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA	
Date Shipped 24-AUG-2011	F.O.B. ORIGIN	Freight Terms Prepaid		Carrier MANITOULIN		BOL No 950481-2	

Shipment Details	Final Destination Branch - MON
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Order No 1651825	Line No 4	Item No 15003.MO	Description 6.5000.RD.17CR-4NI.STAINLESS.RT.SOL TR.COND A.120.0000-168.0000 CUT TO 4.1 IN (+ .2500/- .0000 IN) - BAND SAW CUTTING SPECIFICATIONS: AISI 630,AMS 2303,AMS 5643,ASME SA564,ASTM A564,UNS S17400				
Purchase Order No 14689		Part Number YOUR ITEM NUMBER: D6104-011		Ordered Qty 10 PCS		Invoice Qty 10 PCS	
Details							
Delivery No. 90825312	Mill	Heat Number G17804	Mech Id	PCS 10	Width (IN)	Length (IN)	Shipped Qty(LBS) 400.45

These commodities/technologies are subject to US Export Administration & US State Dept. Regulations and, if intended for export, were/are exported thereunder. Diversion contrary to US Law is Prohibited.

We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.

Reviewed by Authorized Castle Metals Representative:

Date:

SCOT FORGE



8001 Winn Rd., Box 8
Spring Grove, IL 60061
847/587-1000
FAX 847/587-2000

PO # 108440

MATERIAL CERTIFICATION

Page 3 of 3

CASTLE METALS

Material Cert Number
710079 s8259R0

Compliance Statements:

The products supplied are in compliance with the quantity and quality requirements of the purchase order and specifications noted. The test reports represent the actual attributes of the items furnished and the test results are in full compliance with all applicable specifications and order requirements.

Castle Metals FP

HEAT NUMBER	G 17804
MECHANICAL ID	
ITEM CODE	15003
LOT NUMBER	
PO NUMBER	108440
RECEIPT DATE	7-15-2011
SUPPLIER	SCOT FORGE
SPECIFICATION	
LCS	AD
COMMENT	
APPROVED	<i>[Signature]</i>

Note: The recording of false, fictitious or fraudulent statements or entries on this document may be punishable as a felony under Federal Statute.

[Signature]
Jerry Giessinger
Corporate Quality Assurance Manager
This certification has been created and reviewed in
compliance with the Scot Forge QMS



S O L O D	CASTLE METALS 1420 KENSINGTON RD, STE 220 Oak Brook, IL 60523	Shipping Information		Material Cert Number
		DATE Shipped: 07/07/2011 Via: MCKISSICK TRUCK Bill: 3-91606		710079 s8259R0
				Revision Date
				06/30/2011

Item 2 of 2	
Material	Castle Metals Specification 3174-02 Rev 33, ASME SA-564 Type 630 Condition "A" 2010 Edition, ASTM A 564-10 Type 630 Condition "A", AMS 5643R Condition "A", AMS 2303F, UNS# S17400
Heat Treat	per Specification
Destructive Test	per Specification
Finish	Rough Machine with allowance to finish Straightness = 1/8" in 5 Ft allowing .063" to .083" stock on diameter
Reference Size	Access Code: 15003 OD Random Len (inches) 6.5 108 to 156
Surface	500 RMS Saw Cut

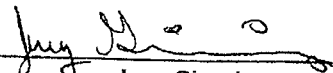
Heat Number	# of Pieces	(MILL - UNIVERSAL STAINLESS)
G17804	2	MSDS Previously Sent

Note: Additional prefix letter stamped on product with heat number is for our inventory purposes only and not relevant to heat number.

Chemical Composition (Wt. %)										
C	Mn	P	S	Si	Ni	Cr	Mo	Cu	Al	V
0.029	0.74	0.020	0.005	0.35	4.77	15.36	0.23	3.27	<0.01	0.06
Cb	N	Ta	B	Co	Sn	Ti	W			
0.25	0.026	<0.01	<0.001	0.05	0.006	<0.01	<0.05			
Cb+Ta										
0.26										

Mechanical Properties:					
Pcs	Tensile PSI	Yield ¹ PSI	Elongation %	Reduction of Area %	Comments
1	196,634	174,732	12.7	44.4	CAP TEST/LONG
¹ (Offset: .2%)					
Rockwell Hardness Results:					
Pcs	Rockwell "C"				
1	42				

Note: The recording of false, fictitious or fraudulent statements or entries on this document may be punishable as a felony under Federal Statute.


Jerry Giessinger
 Corporate Quality Assurance Manager
 This certification has been created and reviewed in compliance with the Scot Forge QMS

CERTIFICAT D'ANALYSE DU MATERIEL
CERTIFICATE OF MATERIAL TEST REPORT



Castle Metals®

CLIENT:

DART AEROSPACE
1270 ABERDEEN
Hawkesbury, ON K6A 1K7 CA

METALX CASTLE CERTIFIE QUE LES INFORMATIONS
SUIVANTES SONT CONFORMES AUX CERTIFICATS
CHIMIQUE ET METALLURGIQUE QUI NOUS ONT ÉTÉ
FOURNIS PAR NOS FOURNISSEURS ET GARDÉS EN
DOSSIER À NOTRE BUREAU.

CASTLE METALS CERTIFIES THAT THE FOLLOWING
INFORMATION IS TAKEN FROM CHEMICAL AND METAL-
LURGICAL TEST REPORTS FURNISHED TO US BY OUR
SUPPLIER AND WHICH ARE ON FILE IN OUR OFFICE.

NOUS CERTIFIONS QU'À NOTRE CONNAISSANCE, IL N'Y A
AUCUN MERCURE OU MATÉRIEL RADIOACTIF UTILISÉ
LORS DE LA COULÉE OU TRANSFORMATION DE L'ACIER
VENDU PAR NOTRE COMPAGNIE.

WE CERTIFY THAT WE HAVE NO KNOWLEDGE OF MERCURY
OR RADIOACTIVE MATERIAL USED IN THE MELTING OR
PROCESSING OF STEEL SOLD BY OUR COMPANY.

MANUFACTURIER(MOULIN)/MANUFACTURER(MILL) SCOT FORGE		NO. COMM. CLIENT/CUSTOMER ORDER NO. 14689		NO. REQUISITION CLIENT/CUSTOMER REQUISITION NO.	
IAC 15003	NO. COULÉE/ HEAT NUMBER G17804	NO. COMM./ORDER NO. 1651825	LIGNE/LINE NO. 4	Q'TE EXPÉDIÉE/Q'TY SHIPPED 400.45 lbs	DATE LIVRÉE/SHIP. 24 Aout 11

6.5000.RD.17CR-4NI.STAINLESS.RT.SOL TR.COND

AMS 5643 R

10 PCS X 4.1

A.M. CASTLE & CO. (CANADA) INC

Sophie Bélanger